

**ZANELLA**

Application No. 10/541,592

Response to Office Action dated March 27, 2008

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims**

Claims 1-72 (Canceled).

Claim 73 (Currently Amended): Electro-stimulation apparatus, comprising an electric-pulse generating device arranged to generate pulses having preset values of typical parameters, an applying arrangement arranged to apply a number of sub-phases forming a sequence of said pulses to an organism, said sequence comprising an initial pulse and a final pulse, ~~wherein it~~ said apparatus further comprises comprising a variation arrangement arranged to perform a substantial variation of at least one typical parameter at a moment comprised between said initial pulse and said final pulse, said variation arrangement comprising means programmed to vary frequency of said pulses by causing between two consecutive sub-phases a frequency discontinuity greater than 60 Hz preceded by sub-phases having non-constant frequencies.

Claim 74 (Previously Presented): Apparatus according to claim 73, wherein said variation arrangement comprises means for causing a sudden decrease in the value of said at least one typical parameter.

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Claim 75 (Previously Presented): Apparatus according to claim 74, wherein said generating device comprises means for causing a gradual increase in the value of said at least one typical parameter, before said sudden decrease.

Claim 76 (Previously Presented): Apparatus according to claim 75, wherein during said gradual increase progressive increments of said at least one typical parameter are provided, said progressive increments being smaller than said sudden decrease by an order of magnitude.

Claim 77 (Previously Presented): Apparatus according to claim 74, wherein said generating device comprises means for causing a further gradual increase in the value of said at least one typical parameter, after said sudden decrease.

Claims 78-81 (Canceled).

Claim 82 (Previously Presented) Apparatus according to claim 73, wherein said variation arrangement is so configured as to actuate said substantial variation when a spasm condition of a muscle stimulated in said organism is reached.

Claim 83 (Previously Presented): Apparatus according to claim 73, wherein said variation arrangement is so configured as to actuate said substantial variation when a frequency is reached at which a major release of growth factors, particularly of VEGF, occurs.

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Claim 84 (Previously Presented): Apparatus according to claim 73, wherein said generating device is so arranged as to generate within said sequence first pulses having a gradually increasing frequency according to a first increment, and second pulses having a gradually increasing frequency according to a second increment, said second increment being greater than said first increment.

Claim 85 (Previously Presented): Apparatus according to claim 84, wherein said second increment is greater by an order of magnitude than said first increment.

Claim 86 (Previously Presented): Apparatus according to claim 84, wherein said sequence comprises, between said first pulses and said second pulses, an intermediate series of pulses with a substantially constant frequency.

Claim 87 (Previously Presented): Apparatus according to claim 86, wherein said intermediate series comprises pulses having a pulse width oscillating between a maximum and a minimum value, said maximum value being substantially equal to twice said minimum value.

Claim 88 (Previously Presented): Apparatus according to claim 73, wherein after said variation said at least one typical parameter remains constant for a number of sub-phases.

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Claim 89 (Previously Presented): Apparatus according to claim 73, wherein said generating device is arranged to generate a further sequence of electrical pulses after said sequence, so that said variation is repeated more than once.

Claim 90 (Previously Presented): Apparatus according to claim 73, wherein said variation arrangement comprises means arranged to vary the width of said pulses.

Claim 91 (Previously Presented): Apparatus according to claim 90, wherein said variation arrangement is so configured as to increase the width of said pulses by applying percentage increments of the current width value.

Claim 92 (Previously Presented): Apparatus according to claim 91, wherein said percentage increments are selected from a group consisting of: 20% of the current width value, 25% of the current width value, 33% of the current width value, 50% of the current width value.

Claim 93 (Previously Presented): Apparatus according to claim 91, wherein between a percentage increment and the subsequent percentage increment a time interval occurs which is randomly selected.

Claim 94 (Previously Presented): Apparatus according to claim 93, wherein said time interval can be varied between 15 s and 60 s.

Claim 95 (Previously Presented): Apparatus according to claim 94, wherein the

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width of said pulses is increased up to a maximum value of about 90-100  $\mu$ s.

Claim 96 (Canceled).

Claim 97 (Currently Amended): A method ~~Method~~ of electro-stimulating an organism, comprising generating ~~a sequence of~~ electric pulses having preset values of typical parameters, ~~said sequence comprising an initial pulse and a final pulse~~, and applying a number of sub-phases forming a said sequence of said pulses to said organism, said sequence comprising an initial pulse and a final pulse, wherein said generating comprises the step of considerably varying considerably at least one typical parameter at a moment comprised between said initial pulse and said final pulse and wherein the step of varying comprises modifying frequency of said pulses by causing between two consecutive sub-phases a frequency discontinuity greater than 60 Hz preceded by sub-phases having non-constant frequencies.

Claim 98 (Currently Amended): A method ~~Method~~ according to claim 97, wherein said varying comprises suddenly decreasing the value of said at least one typical parameter.

Claim 99 (Currently Amended): A method ~~Method~~ according to claim 98, wherein said generating comprises gradually increasing the value of said at least one typical parameter, before said suddenly decreasing.

Claim 100 (Currently Amended): A method ~~Method~~ according to claim 99,

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wherein during said gradually increasing progressive increments of said at least one typical parameter are applied, said progressive increments being smaller than the decrease applied during said suddenly decreasing by an order of magnitude.

Claim 101 (Currently Amended): A method ~~Method~~ according to claim 98, wherein said generating comprises further gradually increasing the value of said at least one typical parameter, after said suddenly decreasing.

Claims 102-105 (Canceled).

Claim 106 (Currently Amended): A method ~~Method~~ according to claim 97, wherein said varying occurs when a spasm condition of a muscle stimulated is reached in said organism.

Claim 107 (Currently Amended): A method ~~Method~~ according to claim 97, wherein said varying takes place when a frequency is reached at which a major release of growth factors, particularly of VEGF, occurs.

Claim 108 (Currently Amended): A method ~~Method~~ according to claim 97, wherein said generating comprises providing within said sequence first pulses having a gradually increasing frequency according to a first increment, and second pulses having a gradually increasing frequency according to a second increment, said second increment being greater than said first increment.

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Claim 109 (Currently Amended): A method ~~Method~~ according to claim 108, wherein said second increment is greater by an order of magnitude than said first increment.

Claim 110 (Currently Amended): A method ~~Method~~ according to claim 108, wherein said sequence comprises, between said first pulses and said second pulses, an intermediate series of pulses with a substantially constant frequency.

Claim 111 (Currently Amended): A method ~~Method~~ according to claim 110, wherein said intermediate series comprises pulses having a width oscillating between a maximum and a minimum value, said maximum value being substantially equal to twice said minimum value.

Claim 112 (Currently Amended): A method ~~Method~~ according to claim 97, wherein after said varying, said at least one typical parameter is kept constant for a number of sub-phases.

Claim 113 (Currently Amended): A method ~~Method~~ according to claim 97, wherein said generating comprises further generating a further sequence of electrical pulses, so that said varying is repeated more than once.

Claim 114 (Currently Amended): A method ~~Method~~ according to claim 97, wherein said varying comprises modifying the width of said pulses.

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Claim 115 (Currently Amended): A method ~~Method~~ according to claim 114, wherein said modifying comprises increasing the width of said pulses by applying percentage increments of the current width value.

Claim 116 (Currently Amended): A method ~~Method~~ according to claim 115, wherein said percentage increments are selected from a group consisting of: 20% of the current width value, 25% of the current width value, 33% of the current width value, 50% of the current width value.

Claim 117 (Currently Amended): A method ~~Method~~ according to claim 116, wherein between a percentage increment and the subsequent percentage increment a time interval occurs which is randomly selected.

Claim 118 (Currently Amended): A method ~~Method~~ according to claim 117, wherein said time interval can be varied between 15 s and 60 s.

Claim 119 (Currently Amended): A method ~~Method~~ according to claim 114, wherein the width of said pulses is increased up to a maximum value of about 90-100  $\mu$ s.

Claim 120 (Canceled).

Claim 121 (Currently Amended): A support ~~Support~~ readable by a data processing device, containing a plurality of data with preset values of typical



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parameters, said data being intended to originate a number of sub-phases forming a sequence of electric pulses to be applied to an organism by means of electro-stimulation techniques, said sequence comprising an initial pulse and a final pulse, wherein a substantial variation of at least one typical parameter is provided in said sequence at a moment comprised between said initial pulse and said final pulse, said substantial variation comprising, between two consecutive sub-phases, a frequency discontinuity greater than 60 Hz preceded by sub-phases having non-constant frequencies.

Claim 122 (Currently Amended): A support ~~Support~~ according to claim 121, wherein said variation comprises a sudden decrease in the value of said at least one typical parameter.

Claim 123 (Currently Amended): A support ~~Support~~ according to claim 122, wherein said sequence comprises a gradual increase in the value of said at least one typical parameter, before said sudden decrease.

Claim 124 (Currently Amended): A support ~~Support~~ according to claim 123, wherein during said gradual increase progressive increments of said at least one typical parameter are provided, said progressive increments being smaller than said sudden decrease by an order of magnitude.

Claim 125 (Currently Amended): A support ~~Support~~ according to claim 122, wherein said sequence comprises a further gradual increase in the value of said at least

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one typical parameter, after said sudden decrease.

Claims 126-129 (Canceled).

Claim 130 (Currently Amended): A support ~~Support~~ according to claim 121, wherein said variation is provided when said at least one typical parameter reaches a value that causes a condition of spasm of a stimulated muscle in said organism.

Claim 131 (Currently Amended): A support ~~Support~~ according to claim 121, wherein said variation is provided when said at least one typical parameter reaches a value at which a major release of growth factors, particularly of VEGF, occurs.

Claim 132 (Currently Amended): A support ~~Support~~ according to claim 121, wherein said sequence comprises first pulses with a gradually increasing frequency according to a first increment, and second pulses with a gradually increasing frequency according to a second increment, said second increment being greater than said first increment.

Claim 133 (Currently Amended): A support ~~Support~~ according to claim 132, wherein said second increment is greater by an order of magnitude than said first increment.

Claim 134 (Currently Amended): A support ~~Support~~ according to claim 132, wherein said sequence comprises, between said first pulses and said second pulses, an

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intermediate series of pulses with a substantially constant frequency.

Claim 135 (Currently Amended): A support ~~Support~~ according to claim 134, wherein said intermediate series comprises pulses having a pulse width oscillating between a maximum and a minimum value, said maximum value being substantially equal to twice said minimum value.

Claim 136 (Currently Amended): A support ~~Support~~ according to claim 121, wherein after said variation said at least one typical parameter remains constant for a number of sub-phases.

Claim 137 (Currently Amended): A support ~~Support~~ according to claim 121, containing data that enable a further sequence of electrical pulses to be generated after said sequence, so that said variation is repeated more than once.

Claim 138 (Currently Amended): A support ~~Support~~ according to claim 121, wherein said variation comprises a sudden change in the width of said pulses.

Claim 139 (Currently Amended): A support ~~Support~~ according to claim 138, wherein said width is increased by applying percentage increments of the current width value.

Claim 140 (Currently Amended): A support ~~Support~~ according to claim 139, wherein said percentage increments are selected from a group consisting of: 20% of the

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current width value, 25% of the current width value, 33% of the current width value, 50% of the current width value.

Claim 141 (Currently Amended): A support ~~Support~~ according to claim 136, wherein between a percentage increment and the subsequent percentage increment a time interval occurs which is randomly selected.

Claim 142 (Currently Amended): A support ~~Support~~ according to claim 141, wherein said time interval can be varied between 15 s and 60 s.

Claim 143 (Currently Amended): A support ~~Support~~ according to claim 138, wherein the width of said pulses is increased up to a maximum value of about 90-100 s.

Claim 144 (Canceled).